

STANDARD B & P "NOTAR"

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TOBACCO INDUSTRY RESEARCH COMMITTEE
350 FIFTH AVENUE NEW YORK 1, N. Y.

Application For Research Grant

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Date: December 23, 1955

1. Name of Investigator: Oleg Yadoff

2. Title: President and Scientific Director

3. Institution: Foundation for Bio-Physico Research
& Address: 215 Coleridge Avenue, Palo Alto, California

(This is a non-profit corporation of the State of New York, incorporated Nov. 10, 1953)

4. Project or Subject: Experimental research on the effect of tobacco, in particular of nicotine, on tumor cells and cancer formation in small tropical Guppies, an aquarium-raised marine animal especially selected for this purpose.

5. Detailed Plan of Procedure (Use reverse side if additional space is needed): The above-described study is of particular interest because of the fact that Guppies in the normal state are particularly susceptible to breast tumors, the incidence of this affliction amongst them being in the neighborhood of 95%. This ailment may therefore be said to constitute a factor helping to determine their life-span, cutting off their lives at the peak. Two to three weeks before finally succumbing to it they are still capable of reproduction. One might say that because of it Guppies die in the flower of adulthood without ever growing old. The creation of a biological environment provided with certain elements ordinarily lacking in the Guppies' natural environment is the first step in reducing the incidence of the tumors. The second is a rationalized diet, compact of those elements most favorable to growth and continuing health. Said diet includes vitamins, minerals, metals. Metals such as iron, copper, magnesium, greatly affect growth and mutations in Guppies. Their controlled introduction into the Guppies' rationalized diet makes it possible to produce marked mutations, assuredly due to the change of the hormones and as a function of the latter to the change of the physiological state of the fish. The increased growth of tails and fins shows the effect of regeneration by differentiation. Which gives some idea of the exceptional usefulness of Guppies in studying the effect of tobacco, and in particular of nicotine.

The Plan of Procedure involves the following: To secure suitable aquarium tanks, capacity being one gallon of water per pair of fish, wherein the proper biological environment (determined in previous studies) would be maintained throughout. Experimental fish would be all of the same age, the youngest, for example, being all 3 months old, the next youngest 6 months, the next 1 year, the next 1½ years, etc. Captured smoke and fumes from cigarettes and cigars would be infused into the water in the tanks in regulated doses.

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It is known that smoke is not disintegrated by water but is conducted by it. However, the nicotine in the smoke will be strained out and will remain in the water, polluting it more and more, in proportion to the smoke doses administered. The fish would be exposed to the water thus polluted for varying controlled periods - one hour, two hours, three hours, etc. ...one day, two days, three days, etc. ...one week, two weeks, etc., samples all along being subjected to chemical and biological tests and analyses and microscopic inspection.

We have immediately available three to four thousand of these Guppies ready for such experiments. Each fish would be examined anatomically and chemically. Thus, the main part of our research would be on the possibility of a connection between nicotine and cancer.

Supplementary studies could be run wherein fish would be subjected simultaneously to the effects of nicotine and antibiotic foods, such as Aminopterin and Actinomycin, which have already been used successfully.

This project would require my own constant presence in the laboratory as well as that of an assistant physicist, part-time, and assistant biologist, part-time, and for the preparation of reports, possible articles and general administration work of an editor-secretary, also part-time. The said project would require one year.

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6. Budget Plan:

Salaries	\$ 6,000
Expendable Supplies	2,800
Permanent Equipment	1,300
Overhead	1,000
Other	1,000
Total	\$12,100

7. Anticipated Duration of Work:

One year

8. Facilities and Staff Available:

One laboratory comprising two rooms, one 30' x 14', the other 18' x 14', plus auxiliary rooms, all equipped with needed lighting, water supply, heating, tank capacity, smoke injectors and pumps, chemical and biological materials required, and 3 to 4 thousand selected Guppies.

9. Additional Requirements:

To have built two tanks, one of 150 gallons, the other of 60 gallons; installation of electrical apparatus for pretreatment of water; biological microscope; surgical instruments; air-compressor (5 atmospheres); various feeds.

10. Additional Information (Including relation of work to other projects and other sources of supply):

Experimental studies on antibiotic methods, with use of Aminopterin and Actinomycin, are being conducted with great success under the direction of Dr. Selman A. Waksman at the New Jersey Agriculture Experimental Station and at the Microbiology Laboratory of Rutgers University. The undersigned believes that an exchange of views with the aforementioned would be most useful.

Signature s/ Oleg Yadoff
Director of Project

s/ Oleg Yadoff, President
Business Officer of the Institution

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